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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,694	02/27/2002	Bruce W. Smith	55071-129	1516

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MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

KIM, PETER B

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/083,694

Applicant(s)

SMITH, BRUCE W.

Examiner

Peter B. Kim

Art Unit

2851

AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,11-15 and 18-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,8,11,14,15,18,21,23,24 and 27 is/are rejected.
- 7) ☒ Claim(s) 5,6,12,13,19,20,25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08).
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Applicant's arguments filed on May 3, 2004 have been fully considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 15, 18, 27, 23, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. (Chen) (6,114,071).

Chen discloses a method of transferring a lithographic pattern and a photography mask for optically transferring a pattern comprising: a plurality of resolvable features (18); and a non-resolvable optical proximity correction feature (12, 14, 16) having a transmission coefficient in the range of greater than 0% to less than 100%, wherein the non-resolvable optical proximity correction feature has a width dimension which is less than the width of a space separating the two of the plurality of resolvable features, the non-resolvable optical proximity correction feature disposed in the center of the space separating the two of the plurality of resolvable features (Fig. 1, and col. 2, lines 45-62, and col. 5, lines 28-67). Regarding a device manufacturing method steps of providing a substrate that is partially covered by a radiation sensitive material, providing a projection beam, using a pattern on a mask and projection the patterned beam onto the layer of radiation-sensitive material, the steps are inherent to all device manufacturing methods.

Chen also discloses a method and a mask wherein one of the non-resolvable features is placed between multiple pairs of the resolvable features (Fig. 3). Chen discloses adjusting the width, position and transmission coefficient of the non-resolvable feature (col. 6, lines 29-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8, 11, 14, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (Chen).

Chen discloses the claimed invention as discussed above; however, Chen does not disclose illuminating the mask with off-axis illumination and computer program for directing the computer to generate a photolithography mask. Official Notice is taken that it is well known in the art of lithography to use off-axis illumination to illuminate the mask and to use computer to generate a photolithography mask. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the mask of Chen in a system that utilizes an off-axis illumination and to generate the mask of Chen by a computer in order to use the mask in Chen in more flexible manner in different lithography systems.

Allowable Subject Matter

Claims 5, 6, 12, 13, 19, 20, 25, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art of record teaches non-resolvable optical proximity correction features functioning to minimize the increase in a second order diffraction component of the mask or to reduce an isofocal inflection point associated with a given set of the resolvable features in combination with the limitations of claims 1 and 4 or claims 8 and 11 or claims 15 and 18 or claims 23 and 24.

Response to Arguments


In response to applicant's arguments, rejections based on Broeke et al. reference is withdrawn. However, Chen et al. reference is used to reject the claims, and the current office action is made non-final.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 571-272-2112. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571 -272-2800.


Peter B. Kim
Patent Examiner
May 11, 2004